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PALO ALTO, CA 94303

EXAMINER

STIGLIC, RYAN M

ART UNIT	PAPER NUMBER
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2111

MAIL DATE	DELIVERY MODE
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09/14/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/822,971

Applicant(s)

GHAFFARI ET AL.

Examiner

Ryan M. Stiglic

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 25 June 2007.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-21 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 5-18 is/are allowed.
- 6) ☒ Claim(s) 1-4 and 19-21 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- ☐ Notice of Informal Patent Application
- ☐ Other: _____

DETAILED ACTION

1. Claims 1-21 are pending and have been examined.
2. Claims 1-4 and 19-21 are rejected.
3. Claims 5-18 are allowed.

Response to Arguments

4. Applicant's arguments filed June 25, 2007, with respect to the rejection of claims 1-4 under 35 U.S.C. § 102(b) as being anticipated by Fujimoto, have been fully considered but they are not persuasive. Regarding applicant's note that reference number 130 is not pictured in Fig. 1, the Examiner thanks applicant for the pointing out the typographical error in the Office Action dated March 13, 2007. The reference number of figure 1 is 103 and not 130. Regarding applicant's argument that "interface units 102 and disk IF unit 12 are not connected together" the Examiner respectfully disagrees. The interface units 102 and disk IF unit 12 are interconnected through selector units 13 thereby communicatively coupling the interface units.

Regarding applicant's argument that "Fujimoto does not disclose or suggest processing of a command that is an element of a serial input/output structure" the Examiner respectfully disagrees. The Fujimoto reference discloses the use of fibre channel as the protocol for the IFs (see column 13, lines 11-12). Fujimoto further discloses that read and write commands are sent from a host computer to a magnetic disk device (see column 12, lines 18-33). According to applicant a serial I/O structure comprises "a command to a storage device, some or no data transfer, and a completion status from the storage device." Therefore, since Fujimoto clearly

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discloses sending read/write commands from the host computer system to a magnetic disk drive through fibre channel, all claim limitations are anticipated.

5. Applicant's arguments, see page 10, filed June 25, 2007, with respect to the rejections of claims 1-4, 14 and 18 under 35 U.S.C. § 102(b) as being anticipated by Matsunami have been fully considered and are persuasive. The rejection of claims 1-4, 14 and 18 over Matsunami has been withdrawn.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 1-4 and 19-21 are rejected under 35 U.S.C. 102(b) as being anticipated by

Fujimoto et al. (US Patent No. 6,385,681).

For claim 1 Fujimoto discloses:

An interconnecting unit for coupling a plurality of hosts to a plurality of storage devices, the coupling involving exchange of a plurality of serial I/O structures between the plurality of hosts and the plurality of storage devices, the interconnecting unit comprising:

a. a plurality of device control units enabling distribution of a plurality of commands to the plurality of storage devices, each of the plurality of commands being an element of a serial I/O structure (Fig. 1 & 4, 104; col. 5, ll. 9-23; col. 7, line 60 – col. 8, line 10; The

control units are used to control the distribution of access requests sent from a host computer. See also *Response to Arguments* above regarding a serial I/O structure.);

b. a plurality of host interface units, each of the plurality of host interface units synchronizing data between a host and the interconnecting unit (Fig. 1, 102; col. 5, ll. 9-10; col. 9, ll. 11-16; The host interface units receive information from the host computer and synchronize the data for transport through the disk array controller.);

c. a plurality of device interface units, each of the plurality of device interface units synchronizing data between a storage device and the interconnecting unit (Fig. 1, 130; col. 5, ll. 24-25; col. 9, ll. 11-16; The disk interface units receive/transmit data to the disk drives synchronized for transmission through the disk array controller.); and

d. an interconnect routing unit to connect a device control unit to a device interface unit (Fig. 1 & 6, 13; col. 8, ll. 11-44; The selector units control routing of information through the disk array controller.), wherein the device control unit is configured to select a routing path out of possible routing paths through the interconnect routing unit between the device control unit and the device unit upon receiving a command from a host to create a connection between the host and a storage device to allow processing of the command which is an element of a serial I/O structure (col. 8, ll. 7-10; The cited passage indicates the device control unit 104 [or its components] perform switching of the selector 302 thus disclosing the selection of a routing path out of possible routing paths. See also *Response to Arguments* above regarding a serial I/O structure.).

For claim 2 Fujimoto discloses:

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The interconnecting unit according to claim 1, wherein each of the plurality of the elements of a serial I/O structure is transmitted in a serial bit format (col. 13, ll. 1-17; Fujimoto discloses the use of Fibre Channels to transmit data. High-speed Fibre Channels transmit data in a serial bit format.).

For claim 3 Fujimoto discloses:

The interconnecting unit according to claim 1, wherein each of the plurality of host interface units converts each of the plurality of the received elements of the serial I/O structure in a serial bit stream format to a character bit format (col. 13, ll. 1-17; Fujimoto discloses the use of Fibre Channels to transmit data. Fibre Channel communication utilizes 8B/10B encoding thus meeting the claim limitations.).

For claim 4 Fujimoto discloses:

The interconnecting unit according to claim 1, wherein each of the plurality of device interface units converts each of the plurality of the received elements of the serial I/O structure in a serial bit stream format to a character bit format (col. 13, ll. 1-17; Fujimoto discloses the use of Fibre Channels to transmit data. Fibre Channel communication utilizes 8B/10B encoding thus meeting the claim limitations.).

For claim 19 Fujimoto discloses:

The interconnecting unit according to claim 1, wherein the routing path includes a read routing path from the host to storage device through the interconnect routing unit and the write routing

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path from the storage device to the host through the interconnect routing unit, the read routing path and the write routing path being selected by the device control unit (col. 8, ll. 7-10, see claim 1 above for discussion pertaining to a routing path selection. Regarding the routing path including a read and write path, Fujimoto discloses [col. 12, ll. 18-33] the read and write paths that are established for transactions to and from a host computer and disk drive.).

For claim 20 Fujimoto discloses:

The interconnecting unit according to claim 19 wherein the device control unit comprises a read select unit configured to select the read routing path and a write select routing unit configured to select the write routing path (Fig. 4, 310; col. 8, ll. 7-10; col. 12, ll. 18-33; The data transfer control unit 310 is configured to select a read routing path and write routing path, thus the data transfer control unit of Fujimoto includes circuitry corresponding to read and write select units).

For claim 21 Fujimoto discloses:

The interconnecting unit according to claim 20, wherein the plurality of device control units each include a single read select unit and a single write select unit for a single host (Each device control unit 104 [Fig. 1 and 4] includes a data transfer unit 310 associated with a host computer [see rejection of claim 20 above for discussion of read and write select units].).

Allowable Subject Matter

8. Claims 5-13 and 15-17 are allowable over the prior art of record for the reasons disclosed in the Office Action dated March 13, 2007.

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9. Claims 14 and 18 are allowable over the prior art of record because of applicant's amendment and persuasive arguments dated June 25, 2007.

Conclusion

10. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ryan M. Stiglic whose telephone number is 571.272.3641. The examiner can normally be reached on Monday - Friday (6:00-3:30).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Rinehart can be reached on 571.272.3632. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



PAUL R. MYERS
PRIMARY EXAMINER

RMS